



**THE DATASHEET OF  
SF-0402FP160-2**





## SinglFuse™ SF-0402FP Series Features

- Fast acting precision thin film chip fuse for overcurrent protection
- 1005 (EIA 0402) miniature footprint
- Surface mount packaging for automated assembly
- UL 248-14 compliant
- RoHS compliant\* and halogen free\*\*

## SF-0402FP Series - Fast Acting Precision Surface Mount Fuses

### Clearing Time Characteristics for Series

| % of Current Rating | Clearing Time at 25 °C |           |
|---------------------|------------------------|-----------|
|                     | Min.                   | Max.      |
| 100 %               | 4 hours                | —         |
| 200 %               | —                      | 5 seconds |

### Additional Information

Click these links for more information:



### Electrical Characteristics

| Model          | Rated Current (A) | Resistance (Ω) Typ.*** | Rated Voltage | Interrupting Rating | Typical I <sup>2</sup> t (A <sup>2</sup> s) **** | Certifications               |
|----------------|-------------------|------------------------|---------------|---------------------|--|------------------------------|
|                |                   |                        |               |                     |  | cUL: <a href="#">E198545</a> |
| SF-0402FP050-2 | 0.50              | 0.38                   | 32 VDC        | 35 A @ 32 VDC       | 0.00317  | ✓                            |
| SF-0402FP080-2 | 0.80              | 0.12                   |               |                     | 0.00532  | ✓                            |
| SF-0402FP100-2 | 1.00              | 0.095                  |               |                     | 0.00724  | ✓                            |
| SF-0402FP125-2 | 1.25              | 0.067                  |               |                     | 0.01344  | ✓                            |
| SF-0402FP150-2 | 1.50              | 0.051                  |               |                     | 0.01356  | ✓                            |
| SF-0402FP160-2 | 1.60              | 0.046                  |               |                     | 0.01672  | ✓                            |
| SF-0402FP200-2 | 2.00              | 0.033                  |               |                     | 0.01983  | ✓                            |
| SF-0402FP250-2 | 2.50              | 0.0225                 |               |                     | 0.03763  | ✓                            |
| SF-0402FP300-2 | 3.00              | 0.02                   |               |                     | 0.05427  | ✓                            |
| SF-0402FP315-2 | 3.15              | 0.019                  |               |                     | 0.06304  | ✓                            |
| SF-0402FP400-2 | 4.00              | 0.016                  |               |                     | 0.0896   | ✓                            |

\*\*\* Resistance value measured with ≤10 % rated current at 25 °C ambient. Tolerance ± 25 %.

\*\*\*\* Melting I<sup>2</sup>t calculated at 10 times rated current.

### Environmental Characteristics

|                                 |                                 |
|---------------------------------|---------------------------------|
| Operating Temperature.....      | -20 °C to +105 °C               |
| Storage Conditions              |                                 |
| Temperature .....               | +5 °C to +35 °C                 |
| Humidity.....                   | 40 % to 75 %                    |
| Shelf Life.....                 | 2 years from manufacturing date |
| Moisture Sensitivity Level..... | 1                               |
| ESD Classification (HBM).....   | Class 6                         |

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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Users should verify actual device performance in their specific applications.

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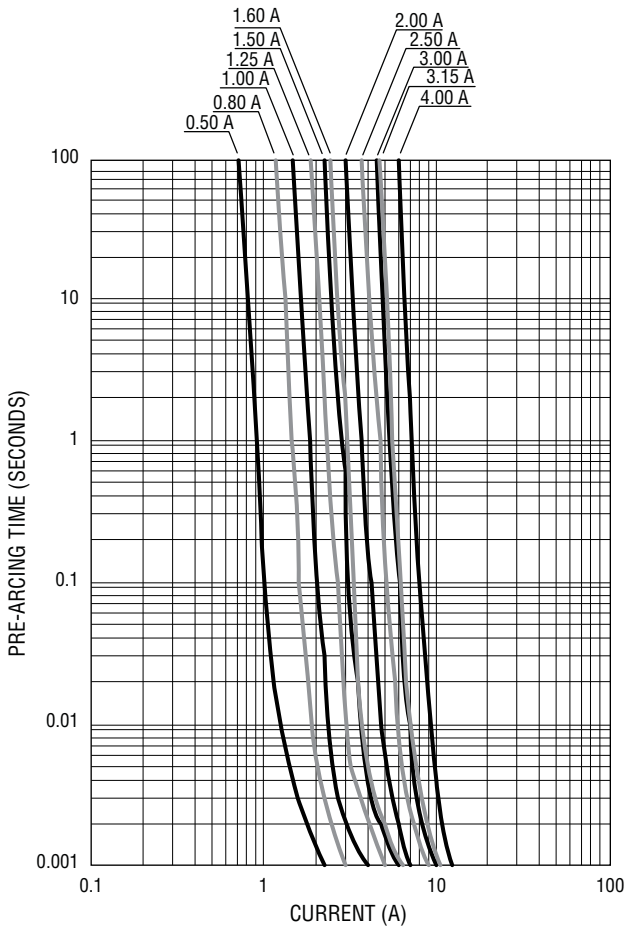
**WARNING Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# SinglFuse™ SF-0402FP Series Applications

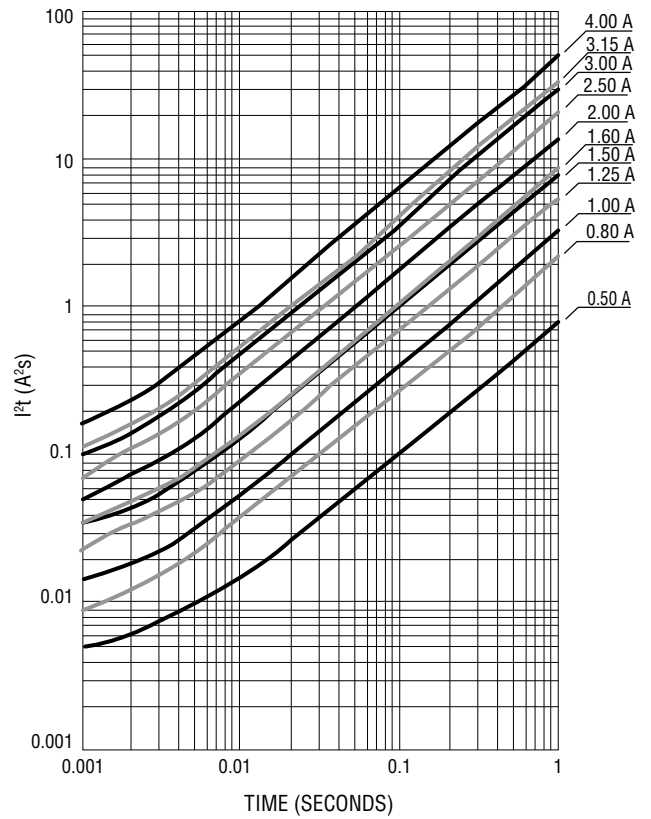
- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- DVDs
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set top boxes
- Industrial controllers

## SF-0402FP Series - Fast Acting Precision Surface Mount Fuses BOURNS®

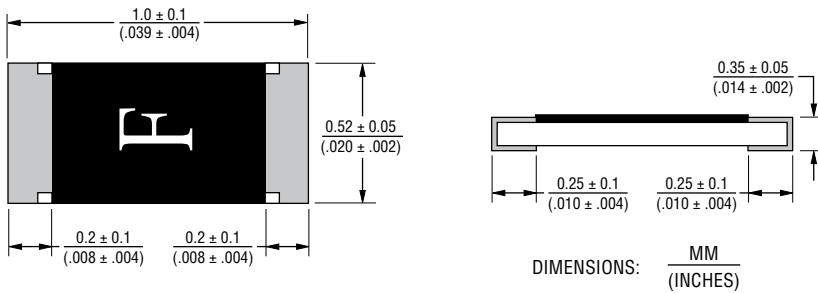
**Average Pre-Arcing Time vs. Current Curves**



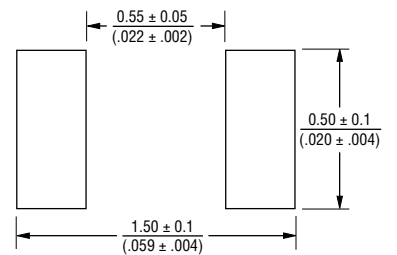
**Average I²t vs. t Curves**



**Product Dimensions**



**Recommended Pad Layout**

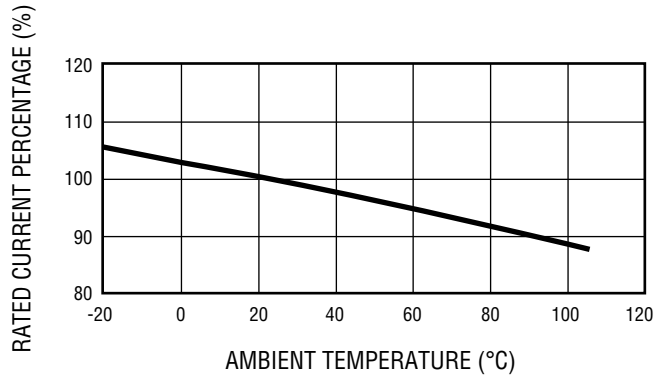


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# SF-0402FP Series - Fast Acting Precision Surface Mount Fuses



## Thermal Derating Curve



## Packaging

|                |                      |
|----------------|----------------------|
| Reel Dimension | 7-inch Tape and Reel |
| Specification  | EIA 481-2            |
| Quantity       | 10,000 pieces        |
| Packaging Code | -2                   |

## Typical Part Marking

Represents total content. Layout may vary.



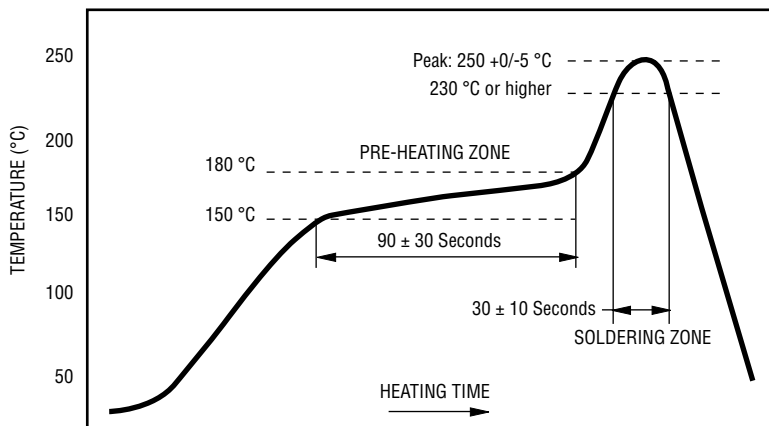
| RATED CURRENT (A) |          |
|-------------------|----------|
| F = 0.50          | S = 2.00 |
| K = 0.80          | T = 2.50 |
| L = 1.00          | 3 = 3.00 |
| M = 1.25          | U = 3.15 |
| P = 1.50          | W = 4.00 |
| N = 1.60          |          |

## How to Order

SF - 0402 FP 050 - 2

- SinglFuse™
- Product Designator \_\_\_\_\_
- SMD Footprint \_\_\_\_\_  
1005 (EIA 0402) size
- Fuse Blow Type \_\_\_\_\_  
FP = Fast acting precision
- Rated Current \_\_\_\_\_  
050-400 (500 mA - 4.00 A)
- Packaging Type \_\_\_\_\_  
2 = Tape & Reel (10,000 pcs./reel)

## Solder Reflow Recommendations



PEAK: 250 +0/-5 °C, 5 seconds  
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

**SF-0402FP Series - Fast Acting Precision Surface Mount Fuses****BOURNS®****Reliability Testing**

| No. | Test                      | Requirement   | Test Condition   |
|-----|---------------------------|---|--|
| 1   | Carrying Capacity         | No fusing   | Rated current, 4 hours   |
| 2   | Fusing Time               | Within 5 seconds                                    | 200 % of its rated current   |
| 3   | Interrupting Ability      | No mechanical damages                               | After the fuse is interrupted, rated voltage applied for 30 seconds again    |
| 4   | Bending Test              | No mechanical damages                               | Distance between holding points: 90 mm,<br>Bending: 3 mm, 1 time, 30 seconds |
| 5   | Resistance to Solder Heat | ±20 %   | 260 °C ±5 °C, 10 seconds ±1 second   |
| 6   | Solderability             | 95 % coverage minimum                               | 235 °C ±5 °C, 2 ±0.5 second<br>245 °C ±5 °C, 2 ±0.5 second (lead free)       |
| 7   | Temperature Rise          | <75 ° C   | 100 % of its rated current, measure of surface temperature                   |
| 8   | Resistance to Dry Heat    | ±20 %   | 105 °C ±5 °C, 1000 hours   |
| 9   | Resistance to Solvent     | No evident damage on protective coating and marking | 23 °C ±5 °C of isopropyl alcohol, 90 seconds                                 |
| 10  | Residual Resistance       | 10k ohms or more                                    | Measure DC resistance after fusing   |
| 11  | Thermal Shock             | ΔR < 10 %   | -20 °C / +25 °C / +125 °C / +25 °C, 10 cycles                                |

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